REMARKS

Applicants have now had an opportunity to carefully consider the Examiner's comments set forth in the Office Action of April 28, 2010. Claims 1-20 remain in this application. Claims 1, 2, 4, and 16 have been amended.

Reconsideration of the Application is requested in view of the comments and amendments herein.

I. The Office Action

Claims 1-19 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 1, 3, 5, 6, 11, 13-17, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,819,014 to Cyr et al. (hereinafter "Cyr") in view of U.S. Pat. App. Pub. No. 2004/0114170 to Christiansen et al. (hereinafter "Christiansen") and further in view of IBM Technical Disclosure NN9308637 (hereinafter "IBM Tech.").

Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Cyr and in view of Christiansen in view of IBM Tech and further in view of Japanese Patent No. 09-050354 to Yomogizawa (hereinafter "Yomogizawa").

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Cyr and in view of Christiansen in view of IBM Tech. and further in view of U.S. Patent No. 5,142,667 to Dimperio et al. (hereinafter "Dimperio").

Claims 7 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cyr and in view of Christiansen in view of IMB Tech. and further in view of U.S. Patent No. 6,785,727 to Yamazaki (hereinafter "Yamazaki").

Claims 7 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Christiansen in view of IBM Tech. and further in view of U.S. Pat. App. Pub. No. 2004/0243937 to Wood et al. (hereinafter "Wood").

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Cyr and in view of Christiansen in view of IBM Tech. and further in view of U.S. Patent No. 5,859,711 to Barry et al. (hereinafter "Barry").

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Cyr and in

view of Christiansen in view of IBM Tech. and further in view of Christiansen.

Claims 18 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Cyr and in view of Christiansen in view of IBM Tech. and further in view of U.S. Patent No. 6,356,355 to Cohen et al. (hereinafter "Cohen").

II. Indefiniteness Rejection

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, the Office Action submits that the phrase "the transfer system data" in lines 10 and 9, respectively, of claims 1 and 16 lacks sufficient antecedent basis. Applicant submits that claims 1 and 16 have been amended to provide proper antecedent basis. Accordingly, the rejections should be withdrawn.

Additionally, the Office Action asserts that the broad recitation of "virtual disk transfer system" after the narrow recitation of "virtual disk remote transfer system" further makes the claims indefinite. Applicant submits that all recitations of "virtual disk transfer system" have been amended to recite "virtual disk remote transfer system." As such, the indefiniteness rejection should be withdrawn.

III. The Present Application

By way of brief review, the present application is directed to improving the speed and efficiency of printing systems and facilitating control and data flow of a print job to the printing system that will obviate multiple accesses to a storage disk for any single job. The system exploits "chunk" parallelism to facilitate its speed. As coined by Applicants, "chunks" comprise a collection of rasterizable data of at least one page and not more than one job. A virtual disk VDISK is used for temporary storage, both of split chunks and print-ready pages. The VDISK is similar to RAM disk with some specific features designed for performance in the contemplated chunk parallel system.

IV. The Subject Claims Patentably Distinguish Over the References of Record

The Office Action purports that Cyr teaches the claimed method of operating a printing system for parallel processing a print job according to the subject claims, except for the splitting

the print job into a plurality of job chunks that range in size, assigning the job chunks to respective processing nodes for parallel processing into printer ready format, and monitoring available space in the virtual disk transfer system including detecting data overflow in the RAM and storing new data in the physical disk until data storage in the RAM is available. Therefore, the Office Action cites Christiansen as teaching these features. According to the Office Action, Cyr and Christiansen are combinable because they are in the same field of endeavor, being high-speed image processing systems capable of printing large print jobs using multiple RIP engines. Applicants respectfully traverse.

Particularly, Applicant submits that Cyr fails to teach or suggest a method of operating a printing system for parallel processing a print job that includes selectively storing the jobs and print ready pages in the virtual disk remote transfer system. Cry discloses a printer system controller that includes a network bus that couples a number of translators with a print interface and a printer. (col. 3, lines 21-24). An image compressor is coupled to an internal bus of each translator to compress the rasterized image. In an archival mode of printing, a storage device is further coupled to the network bus, such that the compressed rasterized image is then stored in the storage device. A user job controller utilizes a VMS operating system to send commands to the print controller. The print controller can store and retrieve pre-rasterized images from the data storage 11. However, Applicant submits that data store 11 is not synonymous the VMS operating system. The VMS of Cyr is simply an operating system of the user interface job controller and is not a virtual storage system itself, as is presently claimed.

The Office Action further submits that Christiansen teaches a method of operating a printing system for parallel processing a print job as presently claimed, but acknowledges that Christiansen fails to disclose that the method includes selectively storing the job chunks and print-ready pages in the virtual disk remote transfer system wherein data from the virtual disk remote transfer system comprises an intermediary storage for data transfer to selected processing nodes including a RAM and a physical disk, and where the virtual disk remote transfer system is implemented by providing a shared memory interface. The Office Action, however, submits that IBM Technical Disclosure (hereinafter "IBM") discloses the method wherein the virtual transfer system data comprises an intermediary storage for data transfer to selected processing nodes including RAM and a physical disk, and wherein the virtual disk remote transfer system is implemented by providing a shared memory interface. Applicants respectfully traverse.

Particularly, Applicant submits that IBM simply teaches the concept of creating shared virtual memory for a cluster of processors. The shared memory includes one large pool of data blocks. However, in contrast to the assertions set forth in the Office Action, IBM does not teach or slightly suggest storing job chunks and print-ready pages in the virtual disk remote transfer system wherein data from the virtual disk remote transfer system comprises an intermediary storage for data transfer to selected processing nodes including a RAM and a physical disk. Rather, IBM simply teaches that a shared virtual disk can support shared access by all processors to non-permanent "disk" storage. This teaching by IBM does not broadly relate in any way to a printing system, let alone the parallel processing of a print job. The Office Action appears to take the subject limitation out of context of the claim. Selectively storing the job chunks and print-ready pages in the virtual disk remote transfer system wherein the data from the virtual disk remote transfer system comprises an intermediary storage for data transfer to selected processing nodes including a RAM and a physical disk is a step in the claimed method of operating a printing system for parallel processing a print job. Taking this step out of context as an attempt to relate to an otherwise unrelated concept is improper.

Moreover, the Office Action purports that Cyr and Christiansen are combinable because they are both high speed image processing systems capable of printing large print jobs using multiple RIP engines. The Office Action also purports that Cyr and IBM are combinable because they are both virtual disk remote transfer systems. However, even if Applicant was to concede that the above combinations are proper, which Applicant does not, the Office Action fails to provide any explanation to support the combination of Christiansen and IBM, which would be required to properly combine Cyr, Christiansen and IBM in the manner set forth in the Office Action. In fact, Christiansen and IBM are not combinable, since they are neither in the same field of endeavor or reasonably pertinent to the problem of which each other deals. The proposed combination would not have commended itself to an inventor's attention in considering his or her own invention as a whole.

Furthermore, independent claim 16 has been amended to recite that paging out the chunks of data from the virtual disk remote transfer system in a most-recently used order, wherein a least recently-used chunk is read soonest. This limitation is also found in claim 4, which has been rejected as being unpatentable over the combination of Cyr, Christiansen, IBM, and Dimperio. Specifically, the Office Action asserts that Cyr, Christiansen and IBM are each silent to the

subject limitation; however, Dimperio discloses that the most recent printing is best for deleting some image files from memory in order to make room for the next image file to be brought into memory. Applicant submits however that the subject limitation is not concerned with deleting information from memory in order to make room for new information. Rather, the subject limitation is directed to the order that the chunks are transferred to the VDISK for intermediate storage. The most recently written blocks are not needed as soon as the least recently written blocks. If the most recently written chunks were deleted from the memory as provided in Dimperio, no blocks would ever then be read.

For at least the aforementioned reasons, Applicant submits that independent claims 1, 16, and 20 (along with claims 2-15 and 17-19 that respectively depend therefrom) patentably distinguish over the references of record. As such, withdrawal of the rejections and allowance of the claims are earnestly solicited.

CONCLUSION

For the reasons detailed above, it is submitted all remaining claims (Claims 1-20) are now in condition for allowance. The foregoing comments do not require unnecessary additional search or examination.

☒ Remaining Claims, as delineated below:

(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT LESS HIGHEST NUMBER PREVIOUSLY PAID FOR		(3) NUMBER EXTRA
TOTAL CLAIMS	**20**	**- 20 =**	**0**
INDEPENDENT CLAIMS	**3**	**- 3 =**	**0**

☒ This is an authorization under 37 CFR 1.136(a)(3) to treat any concurrent or future reply, requiring a petition for extension of time, as incorporating a petition for the appropriate extension of time.

☒ The Commissioner is hereby authorized to charge any filing or prosecution fees which may be required, under 37 CFR 1.16, 1.17, and 1.21 (but not 1.18), or to credit any overpayment, to Deposit Account 24-0037.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to contact the undersigned, at Telephone Number (216) 363-9000.

Respectfully submitted,

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7-28-2010
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